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exclusively, and that no teacher, however strongly he may write or talk concerning modern methods as the only ones, fails to incorporate some of the old with the new. The botanical teaching of the future will consider these not as two opposing methods, but as complementary, both essential to the rounding out of a botanical course.

BEFORE THE botanical activity at our American colleges can be much increased, the Board of Trustees, Regents and Presidents must get rid of the prevalent and most pernicious idea that a college professor's time must be chiefly occupied by teaching. An acquaintance of the writer received lately an invitation to the botanical chair of a well-known Ohio college, in which, after reciting the duties of the chair, the President added: "As at present the professor's whole time will not be occupied, he may be asked to take also some additional work of a congenial nature." Why can not those in authority see that the giving up of the whole time to instruction is the chief cause of the lack of scientific spirit in our colleges as compared with those of Germany? Give any man who has the capacity for original research in him the time necessary for the prosecution of such work and in five years he will attract more students to the institution with which he is connected than he would by fifty years of the most commendable teaching. It is not the fame of DeBary the teacher, but of DeBary the investigator, that draws students to Strasburg. And it is so in every case. The host of German botanists, who might be named, attract American students, not because they are eloquent lecturers or faithful instructors, but because the German University demands that they spend the chief share of their time in conducting original investigation. When American colleges are willing to pay men living salaries, when they demand that *their* professors shall be able to conduct original researches, and when they allow time for the work, then shall we see botany and all the kindred sciences flourish. Such a college would be as a tree planted by the rivers of water!

OPEN LETTERS.

The Honzo Dsufu.

In looking over your note, p. 46, *ante*, on "A Japanese botanical work," I found some typographical errors in the name of its author, which should be Iwasaki Tsunemasa, or rather in your way of writing a personal name Tsunemasa Iwasaki. He lived in Tokyo, and devoted his time and attention to making illustrations of plants in the extensive collection of his own garden, and of those which he met with during his botanical tours and elsewhere. Most of his drawings were made from nature, and with such artistic skill and knowledge of the characters of plants, that one can determine the species with the aid of his plates with readiness and safety. This great work was finished in 1828. The arrangement of the work is after the classical Chinese herbal, the Honzōkōmoku. I think that there

are about a dozen complete sets now in existence, either in private or government possession. In the preface of the "Enumeratio Plantarum in Japonia sponte crescentium" by Franchet and Savatier, an account of the work is given at some length on pp. vi and vii.

Botanical Laboratory, Harvard University.

K. MEIYABE.

Humblebees and Petunias.

In the October number of the BOTANICAL GAZETTE I noticed a note from Mr. Schneck, stating the manner in which the humblebees extract the honey from the flowers of *Physostegia Virginiana*, by making a slit in the base of the corolla. Following is a similar case: During last summer I noticed that the humblebees never attempted to enter the tubes of the common garden *Petunia*, but alighted on the upper side of the corolla, made a slit in its wall near the calyx and inserted their proboscis to extract the honey. The slits were about one-third of an inch long and were made by the bee pressing his mandibles against the corolla, and so forcing apart the tissue, which tears easily in a longitudinal direction. I have not yet noticed whether the flowers so mutilated are after all fertilized by other smaller insects entering the tube. GILBERT VAN INGEN.

Ithaca, N. Y.

CURRENT LITERATURE

Analytical Key to West Coast Botany, containing descriptions of 1,600 species of flowering plants growing west of the Sierra Nevada and Cascade crests, from San Diego to Puget Sound. By Volney Rattan. 12mo. 128 pp. A. L. Bancroft & Co., San Francisco, 1887.

The author is already known by his "Popular California Flora," and this is a continuation of the effort to bring the botany of the west coast within the reach of the schools. This "Analytical Key" is preliminary to a West Coast Botany for beginners, which is promised within three years. Umbelliferæ and Compositæ are omitted, and the more difficult monocotyledonous orders, but the names of the other species are placed within easy reach of beginners. This kind of work is very helpful to botanical science in general, and we expect it to result in a greater array of botanists than ever from the west coast.

Die natürlichen Pflanzenfamilien, by A. Engler and K. Prantl. Part I. Leipzig: Wilhelm Engelmann, 1887.

This is the beginning of a very extensive and important work, and the names of its editors assure botanists that it will be well done. It is intended to give an account of all the natural orders of plants, including their genera and principal species, and is fully and handsomely illustrated. Each order is to be monographed by a specialist, and thus the work will not only be of a high order, but probably completed within a reasonable time. This first part is devoted to palms, by O. Drude, and contains a full account of their distribution (geological as well as geographical), economic value, and structure, both vegetative and reproductive. Botanists will watch the progress of this work with great interest.